Cortes Currents

FORESTS

FORESTS AND CLIMATE CRISIS

AUGUST 16, 2020 | ROD BURNS | 2 COMMENTS

Are Forests in crisis because of changes in our climate, or is the Climate in crisis due to changes in the worlds forests?

Photo essay: Temperature differences in a garden – Rod Burns photo

Modern Forest Categories

Forests fit, basically into 2 categories:

- a) Natural Forest / Old Growth Forest ie. trees and related vegetation which has never been impacted by human activities. and
- b) 2nd / 3rd Growth Forests: ie those trees which have been purposefully planted as plantations / tree farms, with the intent of a future harvest. (Merriman – Webster Dictionary)

The Forest Companies which planted their 2nd growth trees have calculated profitable tree harvests could happen in the 35 – 80 years. Georgia Pines are pulped at 30 years. Douglas Firs (sourced from Canadian seed in the early 1980s) planted in New Zealand are chipped at 35 years. The same Douglas Fir tree species planted in Washington State USA or British Columbia Canada are harvested for lumber or chips between 60 and 80 years.

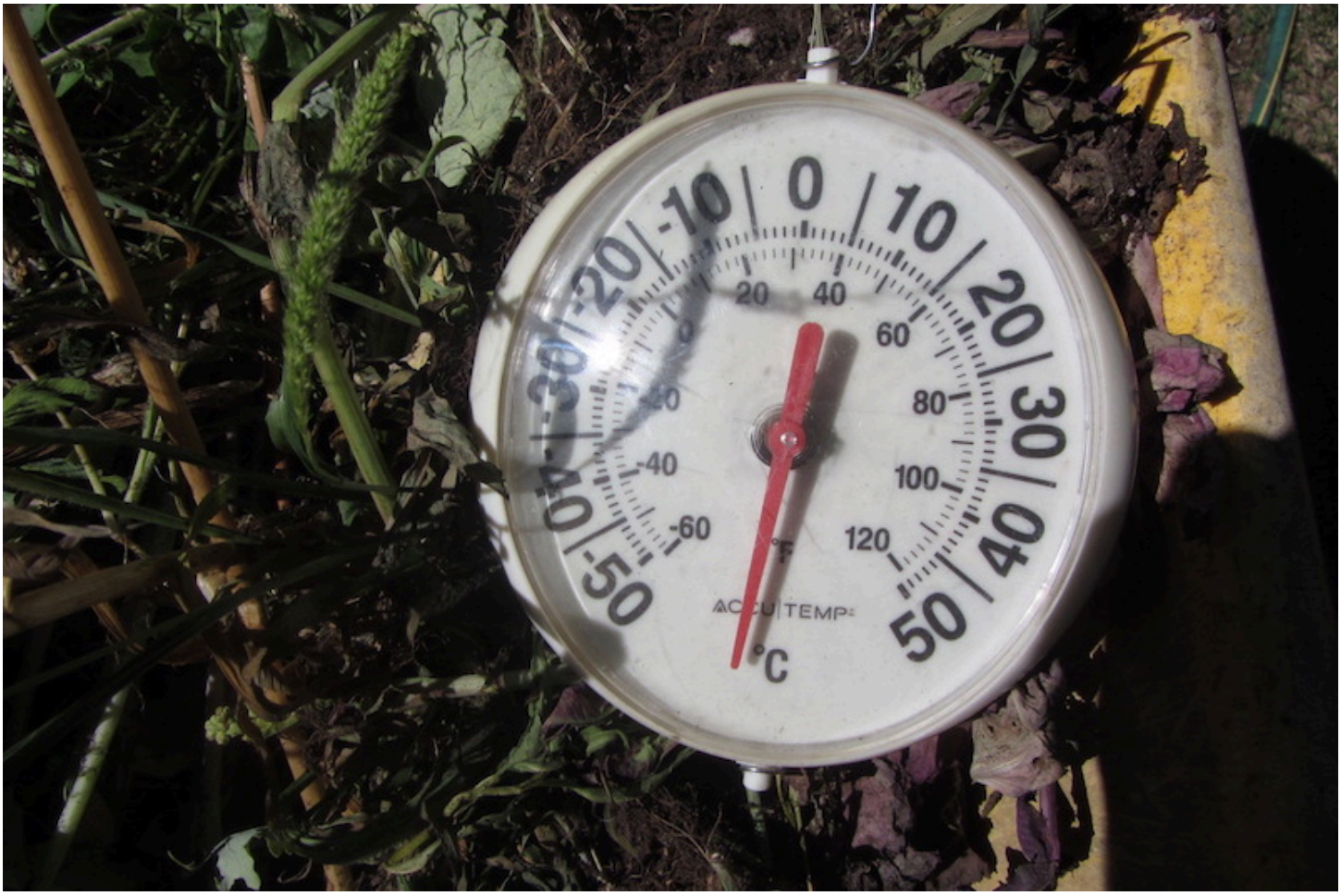
Exploring: Forests in Crisis due to changes in the Global Climate.

The most often heard phrase, within my information sources is the level of Carbon Dioxide C02 needs to be lowered in the next 50 years or we will have an overheated planet.

How is it that as C02 increases in the earths atmosphere, so goes the worlds average temperature?

I understand the heating process as follows; incoming Infra-Red energy waves coming from the sun, land on the earths surface – think about a summer "sun burn". Some wave lengths are absorbed by the earths skin, others by the water. And yet, others are reflected into the atmosphere. Here they are trapped by an ever thickening blanket of C02 molecules. The warmed atmospheric currents cycle back to the earths surface, increasing the overall temperature of land and water for a 2nd time. The cycle in total is often referred to as The Greenhouse Effect

Historically, the earth has gone through many warming / cooling cycles over the past million years. What has become troubling is that the earth temperature has increased in excess of 2.5 C, in the past 200 years, More precisely, since 1970, the temperature increase has been greater than in any similar period since accurate temperature records have been kept (1850's) Researchers' now commonly state " ....that the projected 4 degree C increase, above the worlds average, will lead to the extinction of most species of life, known on the planet."



Ground temperature in direct sunlight, Quadra Island, August 15, 2020 – Rod Burns photo

Forests: the Lungs of the Planet

Be it a single tree to the total forest, including all ground plants, 2 very significant chemical actions take place, simultaneously. Through photo-synthesis, green plants take CO2 from the atmosphere and convert it into 2 by products: Carbon C and Oxygen O2

The Carbon goes into building the cell structure of trees and all other vegetation. O2 (Oxygen) is simultaneously released back into the atmosphere. O2 is the key chemical needed to keep warm and cold blooded animals breathing. As long as forests continue to grow, they pump out more Oxygen (O2) for us to breath. Anyone living through 2020, will know that pumped oxygen has been critical to keep thousands of Covid 19 infected senior citizens (those over 60 years of age) alive. Wearing a mask for a few hours will give you the unwanted experience of NOT getting enough O2 per breath.

Regardless of being a Natural / Old Growth Forest or a human planted 2nd to 3rd growth forest, they all require C02 in their life cycle.

There is a significant group, around the world, who look forward to the increases in CO2 levels: ***Forest Companies: logging to processing.*** Their Professional Foresters totally support the conclusion that Carbon accumulation ie. "Sequestration" is the dominant chemical / molecule in all plant materials. A trees' accumulated fiber growth is almost pure Carbon from root tips to crown leaves and or needles.

Thus with increased C02 in the air, trees are able to inhale more per day, thus putting on more fiber over the year, over their lifetime. Increased fiber translates into more wood to make chip board, paper products and most recently chips for processing into pellets to be sold as the new Green BioFuel!

Foresters have their scientific evidence to convince the public of the economic benefits of increased C02. Indeed reports, which I have read, state and confirm that from 1970 to about 2015, forests have been growing faster, taller, wider, than at any other time, going back centuries. The extra, un-expected growth has paralled the increase in C02 from 1950 to 2015, going from 270 ppm to 350 and to 415 ppm, in 2018

Corporate Green Wash

Forest Industry companies will argue that young forests, in their vigorous growth take more C02 out of the atmosphere than the over mature, decadent forests. The young, quick growing trees it is further argued, by absorbing the C02 from the atmosphere are helping to keep the earth from overheating.

Forest Industry financial advisors increasingly promote that with the global demand to find an alternative to burning coal, for powering thermal generators, the potential profits selling wood pellets has moved upwards. The United States and Canada are investing 100's millions of dollars in gearing up to export shiploads of pellets, internationally. Tree based bio-fuels in many countries have replaced coal

burning as a cleaner, less polluting source of thermal energy for the production of electricity.(Canadian Forest Industries magazine, May-June 2020 Future-Forward Forestry)

Original natural forests, with trees from 100 to over 1,000 years of age, have been given the positive status of "Carbon Sinks." The forest companies argue that cutting original old growth trees is good for the environment and for an economy. The Old Fiber gets a much higher market price, when marketed as house frames to furniture and window frames. Win win! Their pro-CO2 argument goes further: wood framed homes and furniture retain C02 held in the lumber, is like money in a long term deposit account. The timber framed buildings are banked C02, held in deposit "wooden structures CO2" not released into the atmosphere for maybe 100 plus years.

Ground temperature in the shade, Quadra Island August 15, 2020 – Rod Burns photo

Science Debunks CO2 and Unexpected Tree Growth

The contrary research however, is that the newly planted tree farm is actually releasing more CO2 than it is banking. The source of the C02 is from the vegetation on the forest floor which dies, from drought and overheating, releasing more CO2 than is used in production of tree fibres. This negative C02 calculation lasts on average for 13 years (https//itabc/publication-a-research/mitigating-and-adapting-to-climate-change-through-the-conservation-of-nature/ 2008)

2nd) Since 2000, researchers have calculated that the plantation trees have NOT put on a greater volume than expected, in parallel with the amount of CO2 in the post 1970's atmosphere. Another consequence is the 2nd growth tree fibres are not construction grade in strength.

The scientists reason that as the forest floor over heated, dried up and died, the once active microryzil life, fungi, small vegetation no longer interacted delivering the other ground based nutrients needed by trees to mix with the Carbon to put on healthy growth. They also called into consideration that de-creased moisture in the 2nd growth forest, greatly inhibited any nutrient flow from ground, into root tips and up the trees trunk to far off needles, leaves and seeds.

The 2nd growth forest floor for the first 13 years is up to 15C hotter than a natural forest. The extra heat pulls moisture from the forest floor soils and the vegetation, faster than it is replenished. The trees are thus extremely stressed. Many will die, during this period from over heating plus moisture deficiency.

Babies to fifteen years, Quadra Island – Courtesy Rod Burns

Exploring: Climate Crisis due to changes in the Forest Utilization

For decades, students have been taught about the Amazon Rainforest climate cycle.

Over millennia, the forest and rain cycle has enabled an ultra diverse animal and plant community to evolve. Moisture released by western edge rainforests, was carried in the atmosphere and released as torrential rains to the East. The warm air and water quickly mixed into thousands of species of fungi and other mycrorizal turning any dead vegetation into nutrient rich soils.

In the past 40 years increasing millions of square kilometres of Amazon Rainforests and those in North America, have been cut down on an annual basis. In Brazil approximately 70% of it has been by illegal operations. The tree fibers have gone into the local and national "lumber market" as all cities are expanding and need buildings to be constructed.

The hundreds of millions of hectares of de-treed Brazilian – Amazon Forest lands have been converted into pastures to raise in excess of 209 million free ranging beef cattle. The worlds largest producer of beef, that is the United States at the same time is raising approximately 230 million head of cattle on range land or in-feed lots. For every animal raising country, once forested lands have been turned into industrialized agricultural lands. The crops of alphalpha, soya and corn are critical for feed lot raised beef cattle, pigs and chickens and farmed Atlantic Salmon.

Brazilian Meat Exports						
Top Importers	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
China	€ 310,913	€ 446,529	€ 335,466	€ 392,058	€ 985,694	€ 1,583,137
Hong Kong, China	€ 999,117	€ 1,089,472	€ 1,522,346	€ 1,677,477	€ 1,274,304	€ 1,465,253
Saudi Arabia	€ 961,092	€ 1,055,483	€ 1,059,297	€ 916,053	€ 1,224,902	€ 1,150,188
Russian Federation	€ 1,114,764	€ 1,232,860	€ 1,328,351	€ 1,830,244	€ 1,207,698	€ 932,459
Japan	€ 956,372	€ 760,909	€ 735,373	€ 823,483	€ 761,428	€ 656,866
Egypt	€ 389,796	€ 569,661	€ 474,703	€ 543,973	€ 679,562	€ 612,256
United Arab Emirates	€ 354,473	€ 416,701	€ 456,648	€ 450,784	€ 543,611	€ 522,282
Netherlands	€ 551,335	€ 485,746	€ 473,553	€ 447,469	€ 441,089	€ 415,880
Chile	€ 169,909	€ 320,919	€ 333,629	€ 268,417	€ 314,580	€ 387,231
Iran, Islamic Republic	€ 551,398	€ 292,846	€ 216,327	€ 211,521	€ 345,641	€ 340,996
Total All Countries	**€ 9,852,478**	**€ 10,654,794**	**€ 11,132,072**	**€ 11,598,439**	**€ 11,781,667**	**€ 11,435,311**

In the past 20 years, the negative effects of the logged off Brazilian forests have been showing an ugly side a) The heated atmosphere in the Western range and crop lands drops less rains to the East resulting in near drought conditions thus decreased crop yields. b) without the annual decay of forest plants, the soils become too low in nutrients to grow the new grains and corn crops. Lower crop tonnages to feed the animals works upwards to increased prices of food at city grocery shelves.

It has been known for over a hundred years, that within 5 years, the once healthy rain forests become nutrient poor agricultural fields. Without tree roots to break up the clay soil it turns hard and crusty, shedding the water in flash floods. Without soft, moist soils, the grasses and other plants stop growing. (Yale School for the Environment – Global Forest Atlas – numerous articles)

The most used management practice on the grass pasture lands is that they need to be burned about every 5 years to force the sprouting of the pasture grasses.

The ranchers and crop farmers are thus forced to either clearcut another section of rainforests, or burn the forest and grasslands to maintain their farm incomes (*verified by discussion with an international

animal slaughter business owner).

Author checking temperature in the shade, Quadra Island, August 15, 2020 – submitted photo

Conclusion:

Climate change is a natural occurring event on the earth and has been so for millions of years. Equally, since the evolutionary development of vegetation, from small plants to large trees, there have been species extinctions and evolutions. Coal, oil and gas sequestered CO2 sourced from decaying plant matter, started approximately 200 million years ago in the Carboniferous Period.

In the past 200 years, and more seriously, since 1970 ie a mere 70 years, human activity has released more CO2 back into the atmosphere than in any and all other climate change periods. This ultra short period in the history of the earth has recently become known as the Anthropocene Epoch:

(Wikipedia: The Anthropocene is a proposed geological epoch dating from the commencement of significant human impact on Earth's geology and ecosystems, including, but not limited to, anthropogenic climate change.)

Human enterprise: family gardens to corporate ranches, individual homes to massive housing projects, all the related industrial activities have turned Natural Forests into Tree Farms. In this process the un-intended consequence has spawned the Anthropocene Forest and Climate Crisis.

Top photo credit: Sunlight filtering through the trees on a hot day – Roy L Hales photo

CLIMATE CHANGE FORESTRY ON QUADRA FORESTS FORESTS EMITTING CARBON NATURAL FOREST OLD GROWTH FOREST PELLETS FOR FUEL QUADRA ISLAND SECOND GROWTH THIRD GROWTH WOOD CHIPS WOOD PELLETS

2 THOUGHTS ON "FORESTS AND CLIMATE CRISIS"

David Shipway

AUGUST 16, 2020 AT 12:07 PM

The key factor in carbon sequestration in our second-growth coastal forests is the measured ratio of heartwood to sapwood in harvested tree volumes. Fir and Cedar at 60 years of age have at best a 50/50 ratio, and that may climb to 80/20 in the second century. Sapwood in lumber and wood products has absolutely no longevity as stored carbon, so harvesting trees on short rotation, including all the site disturbance and diesel required, is very wasteful of the forests's true potential value, and a significant accelerator of climate change.

Roy L Hales

AUGUST 16, 2020 AT 4:33 PM

Take a look at the sapwood (the yellowish outer layer) in the fifth picture down at http://cortescurrents.ca/tracking-bc-timber-sales-progress/

It is 60-year-old trees harvested on Mt Elphinstone, in the Sechelt. I think we are looking at at least a 50/50 ratio of sapwood to heartwood.

COMMENTS ARE CLOSED.